

**ABSTRACT**

A welding apparatus spot welds two or more overlapping sheets having a coating, such as zinc coated steel or aluminum alloy with an oxide coating. A hole is formed in the upper sheet at the desired point of spot welding. A clamping cup of a plasma arc passes surrounds the hole and contacts the upper surface of the upper sheet. The torch heats the sheet, allowing entrapped vapors in the coating on the lower sheet to vent freely. Filler wire is added to fill the hole and to secure the overlapping sheets together. If the overlapping sheets are zinc coated steel, preferably the filler wire is copper based.

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